FIG.1

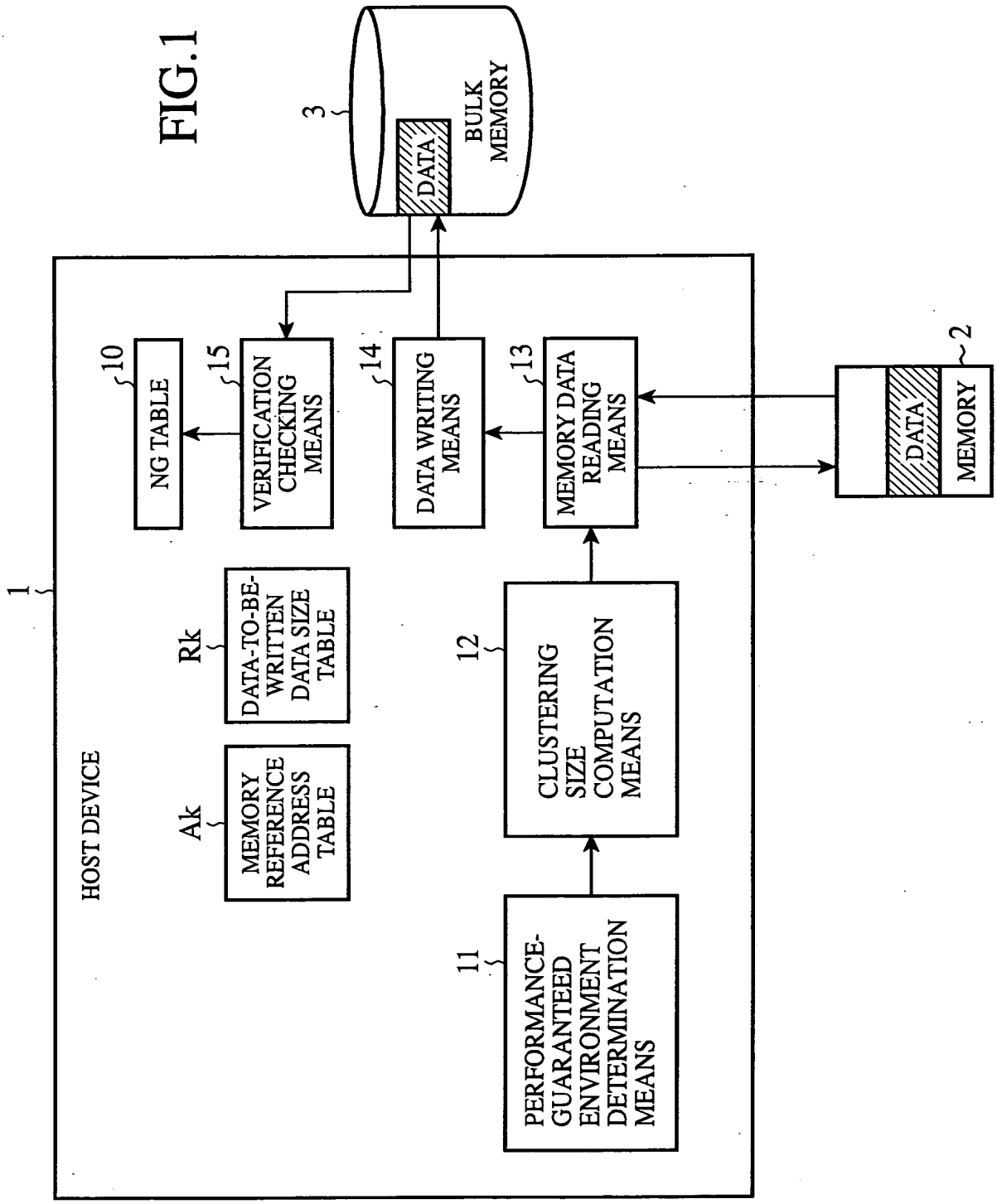

3
BULK MEMORY
DATA
HOST DEVICE
1
10
NG TABLE
15
VERIFICATION CHECKING MEANS
14
DATA WRITING MEANS
13
MEMORY DATA READING MEANS
2
DATA
MEMORY
Rk
DATA-TO-BE-WRITTEN DATA SIZE TABLE
Ak
MEMORY REFERENCE ADDRESS TABLE
12
CLUSTERING SIZE COMPUTATION MEANS
11
PERFORMANCE-GUARANTEED ENVIRONMENT DETERMINATION MEANS

FIG.2

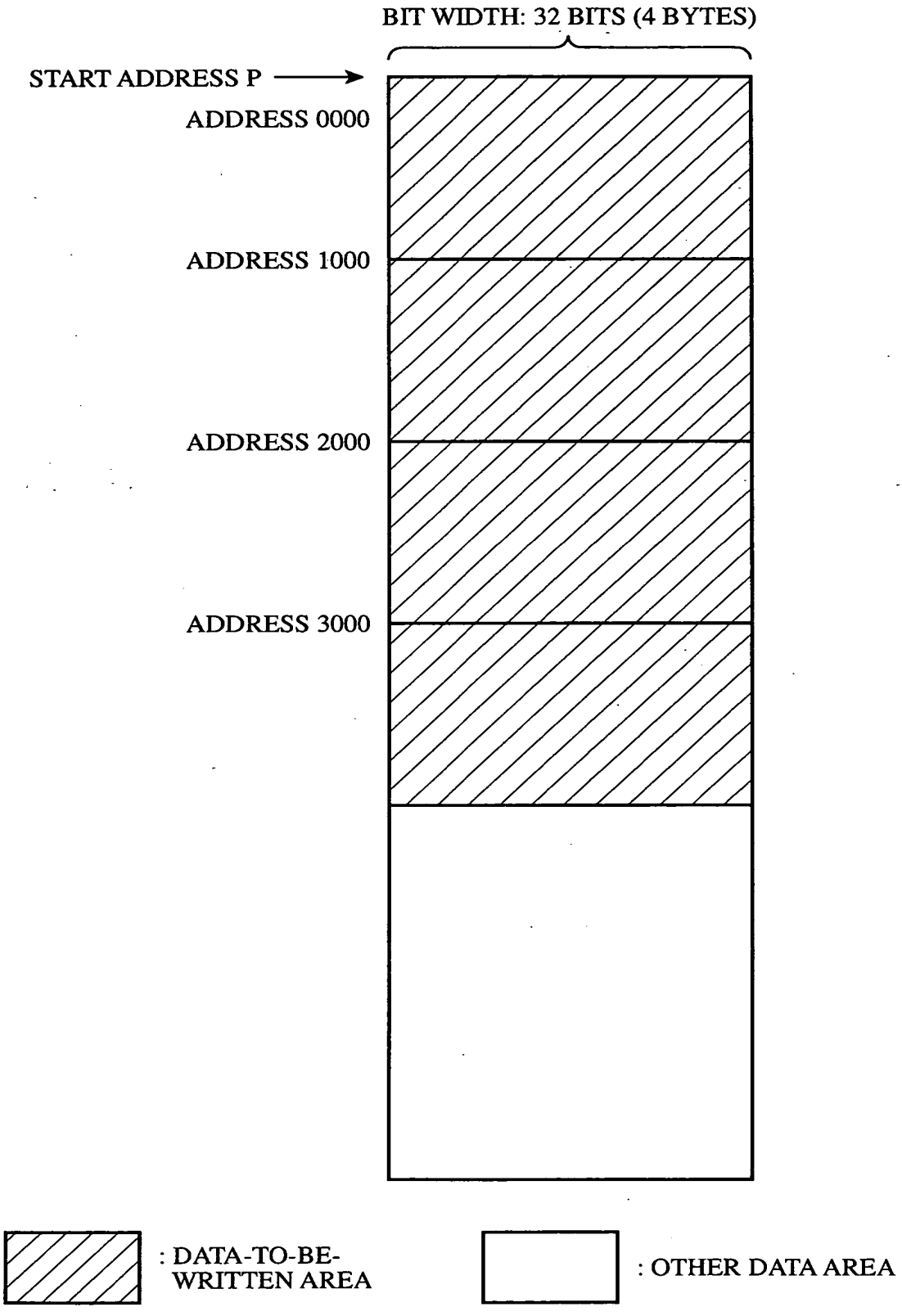

BIT WIDTH: 32 BITS (4 BYTES)
START ADDRESS P
ADDRESS 0000
ADDRESS 1000
ADDRESS 2000
ADDRESS 3000
: DATA-TO-BE-WRITTEN AREA
: OTHER DATA AREA

FIG.3

MEMORY REFERENCE ADDRESS TABLE

A0	A1	A2	A3	A4
ADDRESS P	ADDRESS 1000	ADDRESS 2000	ADDRESS 3000	END MARK

FIG.4

DATA-TO-BE-WRITTEN SIZE TABLE

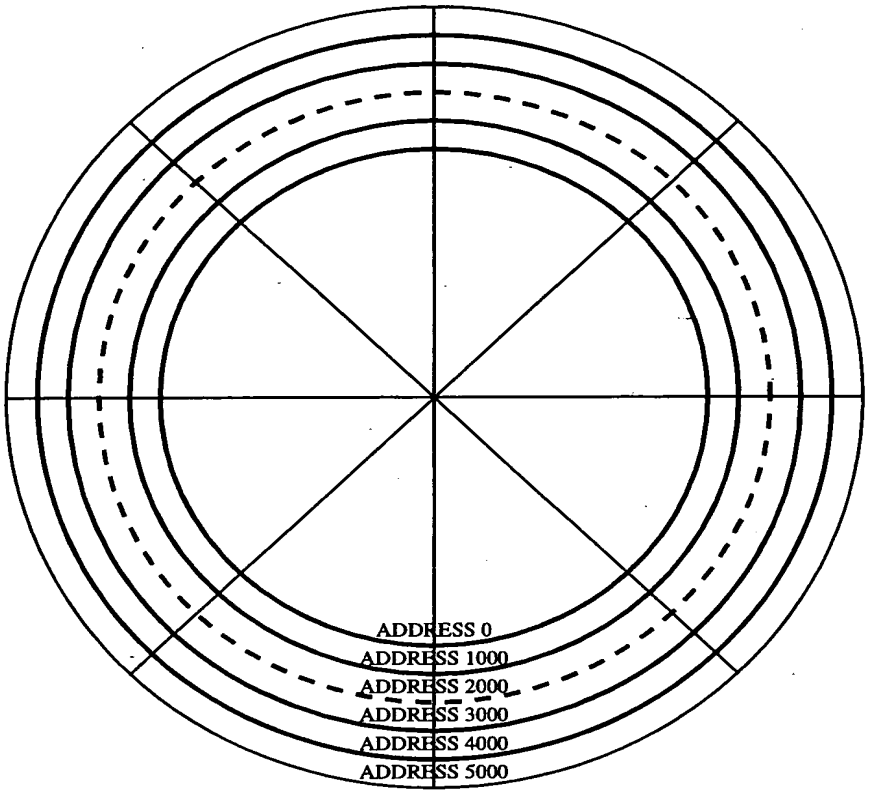
R0	R1	R2	R3	R4
4k BYTES	4k BYTES	4k BYTES	4k BYTES	0k BYTES

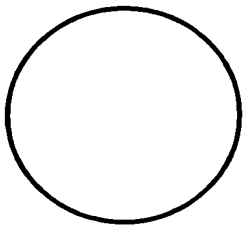
FIG.5

NG TABLE

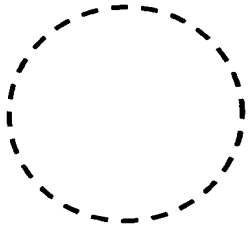
ADDRESS 0	ADDRESS 1000	ADDRESS 2000	ADDRESS 3000	ADDRESS 4000	ADDRESS 5000
○	○	×	○	○	○

FIG.6

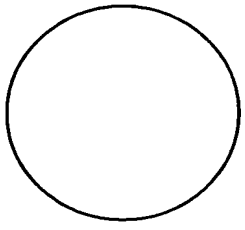




AREA INTO WHICH DATA ARE WRITTEN



AREA INTO WHICH DATA CANNOT BE WRITTEN



OTHER DATA AREA

FIG.7

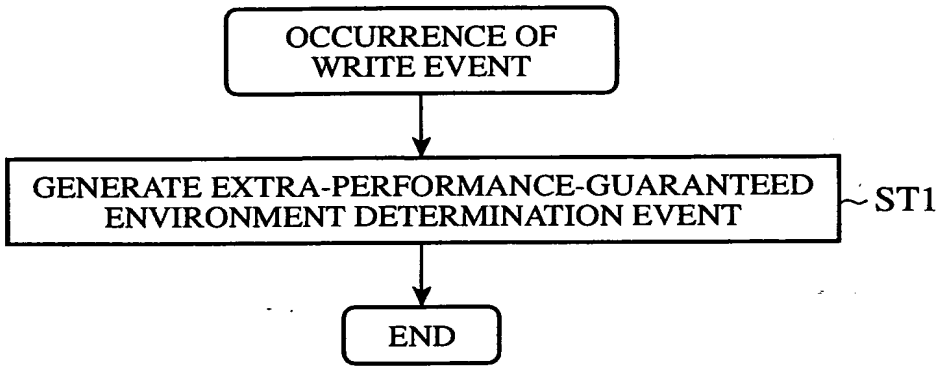

OCCURRENCE OF WRITE EVENT
GENERATE EXTRA-PERFORMANCE-GUARANTEED ENVIRONMENT DETERMINATION EVENT
ST1
END

FIG.8

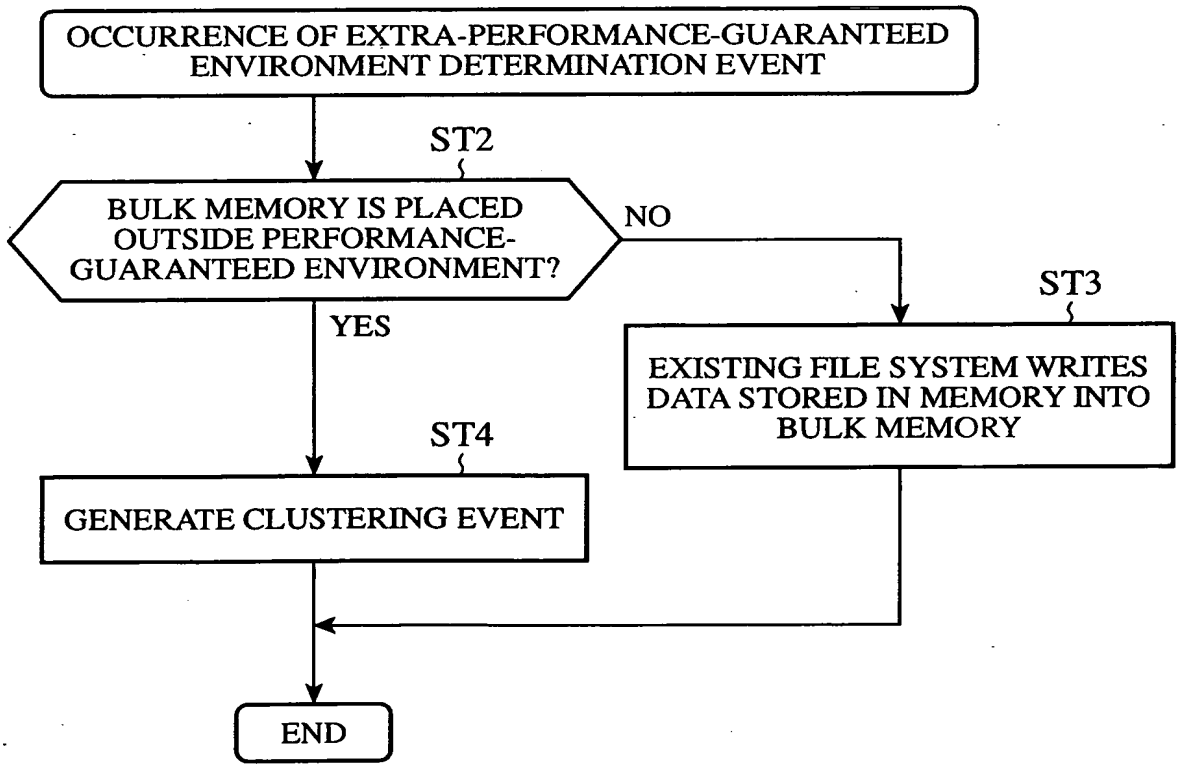

OCCURRENCE OF EXTRA-PERFORMANCE-GUARANTEED ENVIRONMENT DETERMINATION EVENT
ST2
BULK MEMORY IS PLACED OUTSIDE PERFORMANCE-GUARANTEED ENVIRONMENT?
NO
YES
ST3
EXISTING FILE SYSTEM WRITES DATA STORED IN MEMORY INTO BULK MEMORY
ST4
GENERATE CLUSTERING EVENT
END

FIG.9

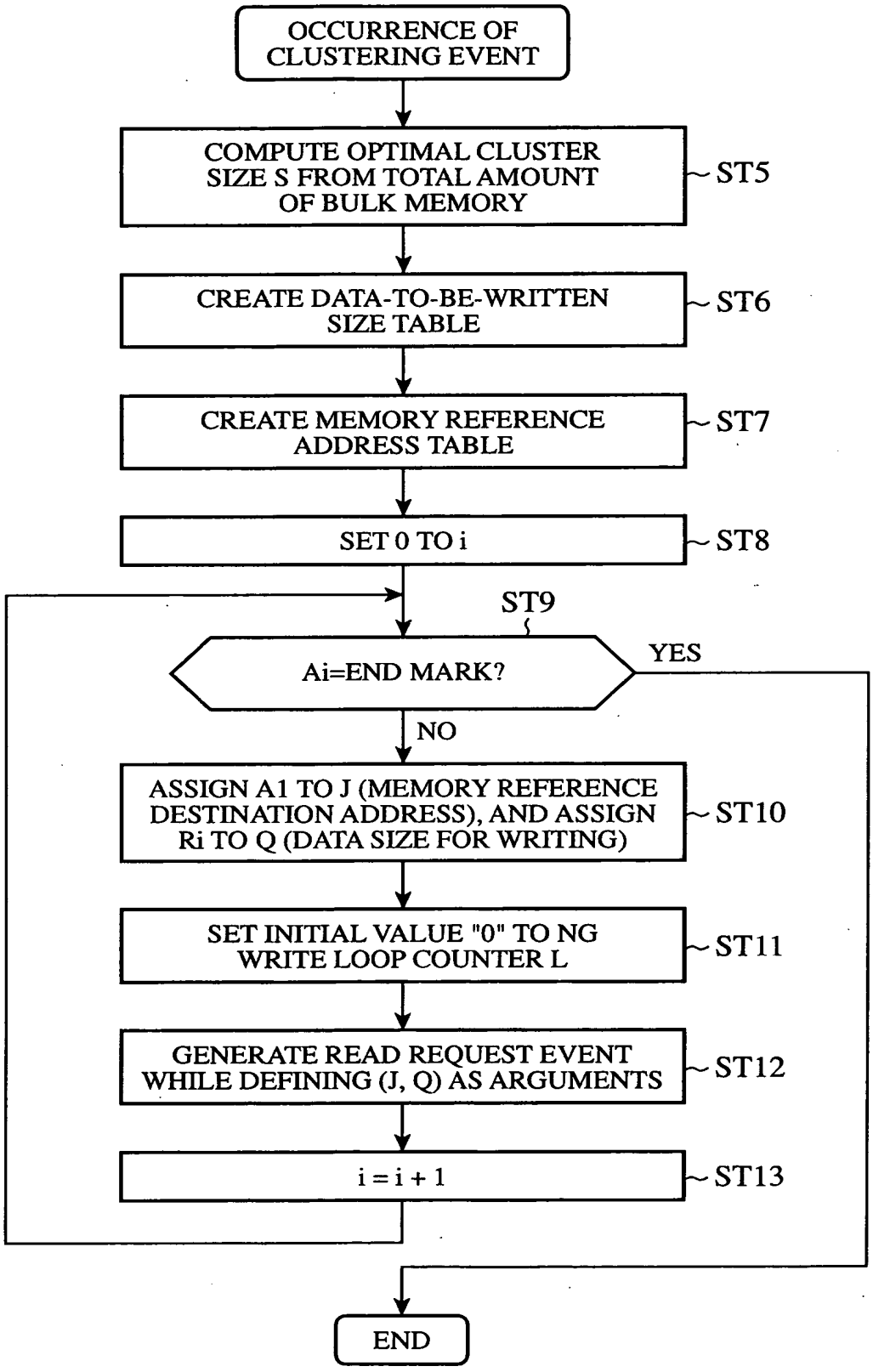

OCCURRENCE OF CLUSTERING EVENT
COMPUTE OPTIMAL CLUSTER SIZE S FROM TOTAL AMOUNT OF BULK MEMORY
ST5
CREATE DATA-TO-BE-WRITTEN SIZE TABLE
ST6
CREATE MEMORY REFERENCE ADDRESS TABLE
ST7
SET 0 TO i
ST8
ST9
Ai=END MARK?
YES
NO
ASSIGN A1 TO J (MEMORY REFERENCE DESTINATION ADDRESS), AND ASSIGN Ri TO Q (DATA SIZE FOR WRITING)
ST10
SET INITIAL VALUE "0" TO NG WRITE LOOP COUNTER L
ST11
GENERATE READ REQUEST EVENT WHILE DEFINING (J, Q) AS ARGUMENTS
ST12
i = i + 1
ST13
END

FIG.10

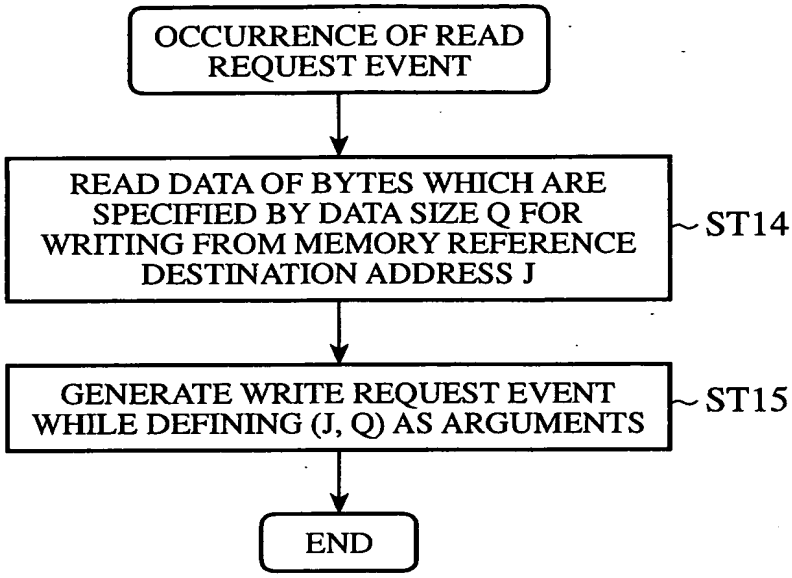

OCCURRENCE OF READ REQUEST EVENT
READ DATA OF BYTES WHICH ARE SPECIFIED BY DATA SIZE Q FOR WRITING FROM MEMORY REFERENCE DESTINATION ADDRESS J
ST14
GENERATE WRITE REQUEST EVENT WHILE DEFINING (J, Q) AS ARGUMENTS
ST15
END

FIG.11

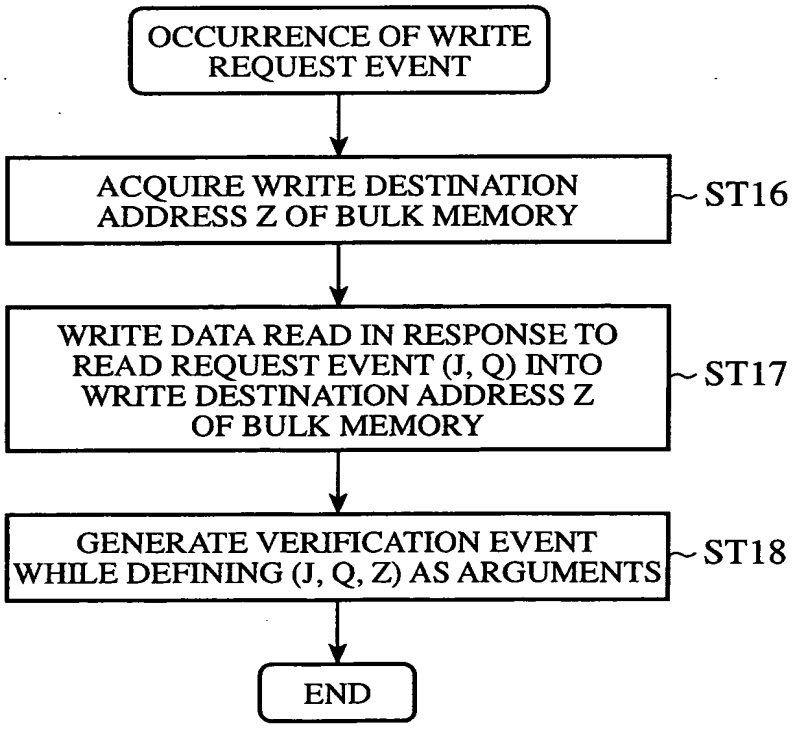

OCCURRENCE OF WRITE REQUEST EVENT
ACQUIRE WRITE DESTINATION ADDRESS Z OF BULK MEMORY
ST16
WRITE DATA READ IN RESPONSE TO READ REQUEST EVENT (J, Q) INTO WRITE DESTINATION ADDRESS Z OF BULK MEMORY
ST17
GENERATE VERIFICATION EVENT WHILE DEFINING (J, Q, Z) AS ARGUMENTS
ST18
END

FIG.12

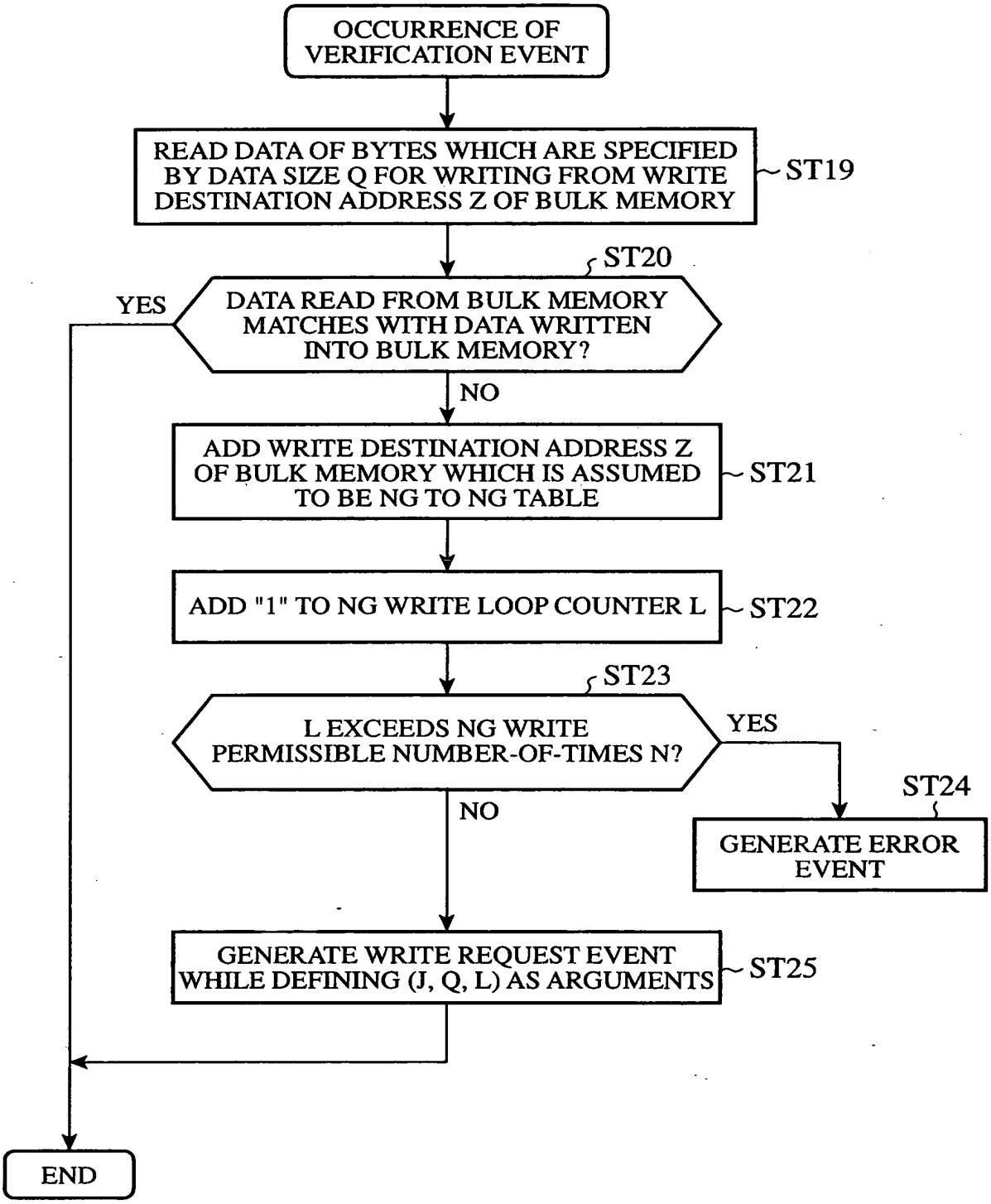
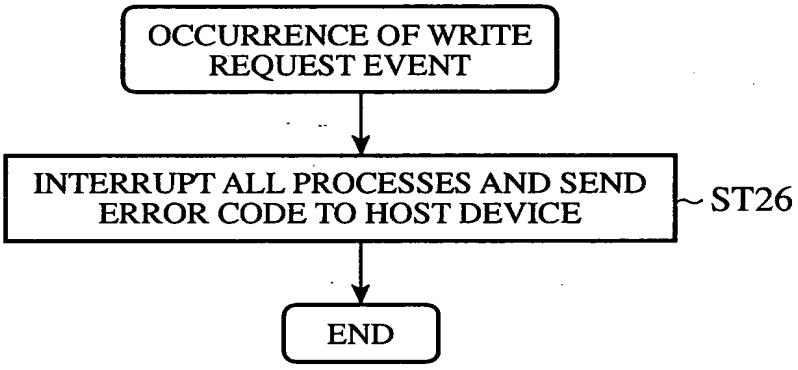

OCCURRENCE OF VERIFICATION EVENT
READ DATA OF BYTES WHICH ARE SPECIFIED BY DATA SIZE Q FOR WRITING FROM WRITE DESTINATION ADDRESS Z OF BULK MEMORY
ST19
ST20
YES
DATA READ FROM BULK MEMORY MATCHES WITH DATA WRITTEN INTO BULK MEMORY?
NO
ADD WRITE DESTINATION ADDRESS Z OF BULK MEMORY WHICH IS ASSUMED TO BE NG TO NG TABLE
ST21
ADD "1" TO NG WRITE LOOP COUNTER L
ST22
ST23
L EXCEEDS NG WRITE PERMISSIBLE NUMBER-OF-TIMES N?
YES
ST24
GENERATE ERROR EVENT
NO
GENERATE WRITE REQUEST EVENT WHILE DEFINING (J, Q, L) AS ARGUMENTS
ST25
END

FIG.13


OCCURRENCE OF WRITE REQUEST EVENT
INTERRUPT ALL PROCESSES AND SEND ERROR CODE TO HOST DEVICE
ST26
END